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"It has been found that if the vehicle of the present invention is driven approximately 30% of its mileage over 55 mph (on ICE) the batteries would never need charging from an outside source."

Also note at column 3 of Ellers on line 65 that "Assuming all the driving was at low urban speeds, only the electric drive motor would be used." It can be easily understood how battery voltage could drop to below 5.25 volts per 6 volt battery during operation of the Ellers system requiring operation as a series hybrid or other emergency solutions.

The Examiner then concludes in the last paragraph that, "It would have been obvious to program the control circuit of Ellers to always connect the engine to the generator during the cruise mode off condition in order to maintain a fully charged battery." But this is not only contrary to what is the system concept of Ellers in the previous paragraph but this statement as to what is "obvious" is contrary to the mode of operation stated by the Examiner in the first sentence at the top of Page 3 of the Office letter where it is stated that, "With respect to claims 42-44, note the control system for using only the electric motor at speeds below the pre-selected desirable speed of 55 mph."

The Examiner states further in paragraph 2 of the Office Letter at page 3 (second paragraph), "With respect to Claim 50, since the cruise mode is set only when the vehicle has reached a predetermined speed, it would have been obvious to activate the cruise mode only after a predetermined period of time...". There is no teaching other than bang bang operation in Ellers for transitioning into ICE operation from electric motor operation. The Examiner fails to recognize that there are 2 conditions called out in Claim 50 for transitioning into cruise mode neither a hint of or expectation of in the bang bang control system of Ellers. See the following distinction presented in applicant's REMARKS in his recent AMENDMENT dated March 23, 1999:

"In order to prevent rapid transitions, jerkiness, and excess pollution when rapidly transitioning from city driving with the high torque electric motor e.g. in city driving to a cruise condition utilizing the combustion engine, 2 conditions must be

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satisfied to establish or maintain cruise mode operation (See page 5, lines 5-13, also page 6 lines 12-15).

Claim 50 and added claim 52 more specifically describes the 2 conditions for cruise mode retention. More importantly, the specification at page 9, lines 23-28 and also page 10, lines 9-15 and 27-29 referring to Fig.2 are further illustrative of electric to combustion engine cruise mode control defined in Claims 50 and more specifically in added dependent claim 52."

Claims 34, 35, 37, 40 & 50-54 are clearly patentable over Ellers within the meaning of 35 U.S.C. 103 since the statements of what is considered "obvious" from Ellers have no basis as pointed out above.

In evaluation of the applied teachings, the Examiner considers all of the disclosure of each teaching for what it would have fairly taught one of ordinary skill in the art. See, *In re Boe*, 355 F.2d 961, 965, 148 USPQ 507, 510 (CCPA 1966). Additionally, the Examiner takes into account not only the specific teachings, but also the inferences which one skilled in the art would reasonably have been expected to draw from the disclosure. See, *In re Preda* 301 F. 2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

Neither a teaching nor inference to the above claimed subject matter results from Ellers.

Ellers neither shows, teaches or suggests "control circuit activation of a second coupling means for connecting the combustion engine to an electric generator for charging a battery during the cruise mode off condition" as specified in Claim 34. In contrast, Ellers is limited to actuating a charging function "Fail Safe System" only when battery voltage is low, i.e. below 5.25 volts per 6 volt battery and does not make available the charging path capability as defined with specificity in Claim 34 (see particularly col. 2, line 47 on with respect to Clutch 65).

Importantly in normal operation, Ellers starts the engine above 55 mph (col.4, line 6). Claim 34 in complete contrast has the engine running to charge the battery during cruise mode "off" (when the Ellers engine isn't running).

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Dependent Claim 35 is clearly patentable as Claim 34 further specifying charging speed conditions and not at some low voltage level when Ellers system requires special actions to be taken.

Claim 37 specifically defines transfer of power from an engine to generator based on running state not battery voltage level as Ellers. Dependent Claim 40 calls out the vehicle running state parameter for effecting the charging path not some low voltage level. Ellers does not utilize the engine to maintain a battery charge to keep it from dropping to a low level but utilizes the engine to drive the wheels in the cruise mode.

Query:

If Ellers is utilizing the engine in the cruise mode, how is the engine used to charge a low battery?

Claim 50 specifically defines a cruise mode operation where conditions of operation specified in the claim prevent rapid on off or cycling sometimes known as bang bang operation. Nothing in Ellers suggests or can an inference therefrom be drawn within the meaning of 35 U.S.C to find the defined subject matter unallowable.

Claim 51 defines engine powering the vehicle at higher speeds while connected through a charging path at lower speeds for maintenance of battery charge when the vehicle is powered by the electric motor. It is not desired to have the result stated by Ellers at col.4, line 67 but to maintain battery charge.

Claim 52 calls for the system of Claim 50 is an exemplary speed drop and time period illustrative of the elimination of undesired on off cycling operation.

Claim 53 contains subject matter defined as allowable at an interview held with the Examiner on 11/10/98. The claim specifically calls in a limitation for utilizing the combustion engine to charge the battery when cruise conditions are not satisfied thus making the combustion engine available to prevent low battery conditions or the need for need for charging from an outside source as the vehicle of Ellers.

Claim 54 was presented to define cruise control logic as responsive to a plurality of vehicle operating parameters which include vehicle speed and accelerator pedal information.

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PARAGRAPH 3 OF THE OFFICE LETTER

Claim 36 is rejected under 35 U.S.C 103 as being unpatentable over Ellers in view of Fields et al (of record).

Claim 36 depends from Claim 34 which is clearly patentable (See paragraph above concerning Claim 34).

In the Ellers system how would the internal combustion engine be started if the batteries are run down. The Examiner has stated that Fields teaches use of the internal combustion engine when the batteries are run down.

PARAGRAPH 4 OF THE OFFICE LETTER

Claims 38, 39 & 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ellers in view of Miyake et. al.

Claims 38, 39, & 41 all are dependent from Claim 37 deemed allowable for the reasons stated above in Paragraph 2 of the Office Letter. Further, Claims 38, 39 & 41 all relate to control means operating parameters. The timing circuits of Miyake et. al. are not needed in Ellers. To the contrary, Ellers teaches a mechanical transmission driving an electric motor and a continuously variable torque converter coupled to the ICE. Note especially col.3, penultimate line through col. 4, line 10 where there is automatic synchronization without any types of time delays specified during the synchronization process.

PARAGRAPH 5 OF THE OFFICE LETTER

Claims 46-49 are rejected under 35 U.S.C. 103 as being unpatentable over Kenyon in view of Lynch et. al.

While Lynch et.al. shows a clutch 23, no logic circuit is shown in Lynch et. al. Nor a logic control circuit functioning during disengagement of the clutch as called for specifically in applicant's claim 46. Neither Kenyon nor Lynch et. al. show the logic circuit in combination as claimed. Claims 47-49 dependent on Claim 46 are also patentable.

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PARAGRAPH 6 OF THE OFFICE LETTER

The Examiner's REMARKS:

Since Ellers teaches recharging the battery whenever the battery is low, it would have been obvious to activate the engine to recharge the battery at all operating speeds of the vehicle as explained above.

Since Ellers teaches recharging of the battery only whenever the battery is low, it would not have been obvious to activate the engine to recharge the battery at all operating speeds as explained above. Further, and importantly since the ICE is charging a fast charge battery as claimed, it is not necessary to keep the ICE running at all operating speeds as stated by the Examiner since a fast charge battery is quickly charged unlike a standard battery.

ADDED CLAIMS 55-60

Claims 55-60 have been added to define further patentable subject matter over Ellers.

Claim 55 includes two features in combination; first, the feature of charging a fast charge battery to keep it charged before low voltage levels are reached, and second, providing acceleration dependent upon an operating parameter of speed drop. Ellers cannot rapidly capture power to a fast charge-discharge battery.

Claim 56 relates to maintaining battery charge from a running ICE engine when not in the cruise mode. It is important to charge a fast charge-discharge battery as claimed when the ICE of the present system is running in the present system when not employed to drive the motor vehicle thus not requiring special considerations and system design as Ellers for a conventional 12 volt battery.

Claim 57 relates to the feature defining cruise mode based upon power and speed functions. Ellers shifts to cruise mode at a certain speed alone. A plurality of factors are considered before moving into the cruise mode as claimed in contrast to Ellers.

Claim 58 defines horsepower stated in applicant's specification.

Claim 59 claims 2 features in combination including maintaining battery charge during periods of a continuously running ICE. The power from ICE must be conserved and captured into a fast charge-discharge battery when it continues to run thereby maintaining efficient use of

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the ICE when utilized to charge the primary source of electromotive power. The ICE energy cannot be used to slowly charge a standard battery when the voltage falls to a level below 5.25 volts per 6 volts battery voltage.

Claim 60 is a method claim calling for cruise mode operation based upon a control function which includes a plurality of operating parameters, not simply throttle pedal information alone.

CONCLUSION

It is believed for the reasons given above that all the claims presented are allowable and the application is in condition for allowance. An affidavit under Rule 132 is added for the primary Examiner's consideration in accordance with M.P.E.P. Section 716.

The fee for claims has been calculated as shown below:

	Claims Remaining After Amendment	Highest No. Previously Paid For	Present Extra	Rate	Add'l Fee
Total	27	Minus	= 6	x \$9 =	\$54
Indep.	12	Minus 6	= 6	x \$39 =	\$234.00
<input type="checkbox"/> First Presentation of Multiple Dependent Claim				+ \$260 =	\$0
Total Additional Fee					\$288.00

A check in the amount of \$288.00 is enclosed to cover the cost of the six newly added independent claims.